United States Patent 5768532

Method and distributed database file system for implementing self-describing distributed file objects

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Inventor(s)

Assignee

International Business Machines Corporation

Application

No. 664706 filed on 1996-06-17

Current US Class

709/245 , 370/409 , 707/104.1 , 709/201

Field of Search

370/409 , 707/10 , 707/103 , 711/216

Examiners

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US Patent References

5301337
5371675
5381534
5542078
5551027
5581760
5687363
5701462

Abstract

A method and apparatus are provided for implementing self-describing file objects. A node group is created for defining multiple computer systems for storing data. A hash algorithm for applying to data records is identified. A partition distribution map for distributing data to each of the multiple computer systems utilizing a set of predetermined hash algorithm results and remote system information for each of the multiple computer systems are identified. A file object is created in each of the multiple computer systems. Each the file objects includes the hash algorithm, the partition distribution map, and the remote system information. A data record is inserted into one of the distributed file objects by receiving the data record, applying the hash algorithm to the received data record,

Foreign Patent References

522488 EP Jan., 1993

WO96/07149 WO Mar., 1996

comparing the hash algorithm result with the partition distribution map to identify the particular computer system for the data record, utilizing the system information to establish connection to that system. The file objects are fully self-describing, eliminating the need for additional objects to be addressed, opened, paged into memory or the like.

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Search Results - Record(s) 1 through 6 of 6 returned.

☐ 1. Document ID: US 20060034263 A1

L2: Entry 1 of 6 File: PGPB Feb 16, 2006

PGPUB-DOCUMENT-NUMBER: 20060034263
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060034263 A1

TITLE: Model and system state synchronization

PUBLICATION-DATE: February 16, 2006

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US-CL-CURRENT: 370/352

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Image

☐ 2. Document ID: US 20050097503 A1

L2: Entry 2 of 6 File: PGPB May 5, 2005

PGPUB-DOCUMENT-NUMBER: 20050097503
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050097503 A1

TITLE: XML-based template language for devices and services

PUBLICATION-DATE: May 5, 2005

INVENTOR-INFORMATION:

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US-CL-CURRENT: 717/100

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Image

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☐ 3. Document ID: US 20050074018 A1

L2: Entry 3 of 6 File: PGPB Apr 7, 2005

PGPUB-DOCUMENT-NUMBER: 20050074018
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050074018 A1

TITLE: XML-based template language for devices and services

PUBLICATION-DATE: April 7, 2005

INVENTOR-INFORMATION:

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US-CL-CURRENT: 370/401

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Image

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☐ 4. Document ID: US 20040199572 A1

L2: Entry 4 of 6 File: PGPB Oct 7, 2004

PGPUB-DOCUMENT-NUMBER: 20040199572
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040199572 A1

TITLE: Architecture for distributed computing system and automated design, deployment, and management of distributed applications

PUBLICATION-DATE: October 7, 2004

INVENTOR-INFORMATION:

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US-CL-CURRENT: 709/201

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw Desc | Image

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5. Document ID: US 20020029256 A1

L2: Entry 5 of 6 File: PGPB Mar 7, 2002

PGPUB-DOCUMENT-NUMBER: 20020029256
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020029256 A1

TITLE: XML-based template language for devices and services

PUBLICATION-DATE: March 7, 2002

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Ford, Peter S.	Carnation	WA	US

US-CL-CURRENT: 709/218

☐ 6. Document ID: US 6910068 B2

L2: Entry 6 of 6 File: USPT Jun 21, 2005

US-PAT-NO: 6910068
DOCUMENT-IDENTIFIER: US 6910068 B2

TITLE: XML-based template language for devices and services

DATE-ISSUED: June 21, 2005

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APPL-NO: 09/811362 [PALM]
DATE FILED: March 16, 2001

PARENT-CASE:
RELATED APPLICATION DATA This is a continuation-in-part of U.S. patent application Ser. No. 09/496,318, entitled "Dynamic Self-Configuration For Ad Hoc Peer Networking", filed Feb. 1, 2000, which is based on provisional application No. 60/139,137 filed Jun. 11, 1999, and provisional application No. 60/160,235 filed Oct. 18, 1999. This also claims priority to provisional application No. 60/190,943, filed Mar. 21, 2000, which is hereby incorporated by reference.

INT-CL-ISSUED: [07] G06F 15/177

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPN	H04 L 29/08	20060101
CIPS	H04 L 29/06	20060101

CIPS	H04 L 12/56	20060101
CIPS	H04 L 12/46	20060101
CIPS	H04 L 29/12	20060101
CIPS	H04 L 12/28	20060101

US-CL-ISSUED: 709/220; 709/218, 709/225, 709/229, 709/249
US-CL-CURRENT: 709/220; 709/218, 709/225, 709/229, 709/249

FIELD-OF-CLASSIFICATION-SEARCH: 709/218, 709/220, 709/225, 709/229, 709/249
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
5394556	February 1995	Oprescu	395/800
5491800	February 1996	Goldsmith et al.	395/200.12
5559967	September 1996	Oprescu et al.	395/285
5627964	May 1997	Reynolds et al.	395/183.22
5745126	April 1998	Jain et al.	382/154
5748980	May 1998	Lipe et al.	395/828
5764930	June 1998	Staats	395/287
5787246	July 1998	Lichtman et al.	395/200.5
5787259	July 1998	Haroun et al.	395/200.83
5793979	August 1998	Lichtman et al.	395/200.56
5809331	September 1998	Staats et al.	395/830
5881230	March 1999	Christensen et al.	395/200.33
5903728	May 1999	Semenzato	395/200.47
5903894	May 1999	Reneris	707/100
5938752	August 1999	Leung et al.	710/126
6083276	July 2000	Davidson et al.	
6101499	August 2000	Ford et al.	707/10
6167448	December 2000	Hemphill et al.	
6466971	October 2002	Humpleman et al.	
6477566	November 2002	Davis et al.	709/223
6507856	January 2003	Chen et al.	715/513
6546419	April 2003	Humpleman et al.	
6553402	April 2003	Makarios et al.	709/201
6560633	May 2003	Roberts et al.	709/202

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
WO 99/35856	July 1999	WO	

OTHER PUBLICATIONS

A. Kung, B. Raither, S. McConnell, Electronic Commerce Services Expand Home Automation Capabilities, TRIALOG, EMMSEC '99 Conference, Jun. 1999, pp. 1-7.
Web Interface Definition Language (WIDL), NOTE-widl-970922, WebMethods, Inc. 1997, pp. 1-15.
"Home Plug & Play.TM.: CAL-based Interoperability for Home Systems," HomePNP.TM.Specification. Version 1.0, pp. 1-111, (Apr. 9, 1998).
White Paper, "HAVi, the A/V digital network revolution," HAVi Organization, pp. 1-7 (1999).
"Specification of the Home Audio/Video Interoperability (HAVi) Architecture," The HAVi Specification. Version 1.0 (Jan. 18, 2000).
Anderson, "FireWire System Architecture: Second Edition, IEEE 1394a," chapters 1-4 (1999).
Technical White Paper, "Jini Architectural Overview," Sun Microsystems, Inc. (1999).
"Salutation Consortium Frequently Asked Questions," The Salutation Consortium, pp. 1-6 (prior to filing date).
"Salutation Architecture Specification (Part-I), Version 2.0c," The Salutation Consortium, (Jun. 1, 1999).
"How it works," Thalia, pp. 1-3 (prior to filing date).
"Sun Microsystems and Thalia Productions Inc. to Collaborate to Co-Develop Network Software and Protocols for the Home, Results to Make Networked Appliances for the Home a Reality," Sunbeam Corporation, pp. 1-2 (2000).
"Sunbeam Joins Microsoft in the Universal Plug and Play Forum to Establish A `Universal` Smart Appliance Technology Standard," Sunbeam Corporation, pp. 1-2 (2000).
"Time for Smart Talk is Over, Sunbeam Trumps Small Appliance Industry With Smart Appliance Debut," Sunbeam Corporation, pp. 1-4 (2000).
"Lonworks Core Technology," Echelon Corporation, pp. 1-2 (2000).
"Underlying Protocol of Echelon's Lonworks.RTM. Network Adopted as New ANSI Standard, Free Reference Implementation Available to Developers," Echelon Corporation, pp. 1-2 (2000).
Handley et al., "SIP: Session Initiation Protocol," The Internet Society, pp. 1-130 (Aug. 6. 2000).
Rosenberg et al., "SIP Extensions for Instant Messaging," Internet Engineering Task Force, pp. 1-30 (Jun. 15, 2000).
Rosenberg et al., "SIP Extensions for Presence," Internet Engineering Task Force, pp. 1-77 (Jun. 15, 2000).
Tsang et al., "Requirements for Networked Appliances: Wide-Area Access, Control, and Interworking," Internet Engineering Task Force, pp. 1-9 (Sep. 2000).
Tsang et al., "SIP Extensions for Communicating with Networked Appliances," Internet Engineering Task Force, pp. 1-9 (Nov. 2000).
Moyer et al., "Framework Draft for Networked Appliances Using the Session Initiation Prtocol," Internet Engineering Task Force, pp. 1-31 (Nov. 2000).
Marples, "Naming and Accessing Network Appliances using extensions to the Session Initiation Protocol," SIP for Toaster, Telcordia Technologies (2000).
"Networked Appliances," AR Greenhouse, Telcordia Technologies, pp. 1-2 (Dec. 15, 2000).
Moyer et al., "SIP for Light Bulbs, Using SIP to Support Communication with Networked Appliances," Telcordia Technologies (Aug. 2, 2000).
Bennett et al., "Integrating Presence with Multi-media Communications," White Paper, Dynamicsoft., pp. 1-18 (2000).
Rosenberg et al., "An Application Server Architecture for Communications Services," White Paper, Dynamicsoft., pp. 1-13 (2000).
"EIB Technology," EIB (2000).
Freeman et al., "JavaSpaces.TM.Principles, Patterns, and Practice," Addison-Wesley Longman, Inc., Reading, Massachusetts (1999, Sun Microsystems, Inc.).
Arnold et al., "The Jini.TM.Specification," Addison-Wesley Longman, Inc., Reading, Massachusetts (1999, Sun Microsystems, Inc.).
Edwards, "Core Jini.TM., Second Edition," Prentice Hall PTR, Upper Saddle River, New Jersey (2001).

ART-UNIT: 2182

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ABSTRACT:

A universal plug and play (UPnP) device makes itself known through a set of processes-discovery, description, control, eventing, and presentation. Following discovery of a UPnP device, an entity can learn more about the device and its capabilities by retrieving the device's description. The description includes vendor-specific manufacturer information like the model name and number, serial number, manufacturer name, URLs to vendor-specific Web sites, etc. The description also includes a list of any embedded devices or services, as well as URLs for control, eventing, and presentation. The description is written by a vendor, and is usually based on a device template produced by a UPnP forum working committee. The template is derived from a template language that is used to define elements to describe the device and any services supported by the device. The template language is written using an XML-based syntax that organizes and structures the elements.

38 Claims, 51 Drawing figures

Term	Documents
DATA	4135254
DATUM	38125
STRUCTURE	5002189
STRUCTURES	1318386
(1 AND (STRUCTURE NEAR DATA)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	6
(L1 AND (DATA NEAR STRUCTURE)).PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD.	6